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NOTES AND BRIEF ARTICLES

Mr. A. S. Rhoads, assistant in forest botany at Syracuse University, visited the Garden April 20–23 to consult the collection of Polyporaceae in the mycological herbarium.

Mr. C. C. Hanmer, of East Hartford, Connecticut, has sent in a very interesting specimen of *Russula flava* Romell collected by him at Kineo, Maine, in August, 1911. The specimen grew alone beneath a log covered with clusters of *Armillaria mellea* and one of the "shoestring cords" of this fungus came in contact with the moist upper surface of the *Russula* and developed a tiny hymenophore of the *Armillaria,* which in the dried state is nearly 2 cm. high. Spores from the *Armillaria* clusters fell plentifully upon the *Russula* and the stipe of the young *Armillaria* was partly imbedded in the surface of the *Russula,* strongly suggesting to Mr. Hanmer at first glance that it had developed in some unusually rapid way from one of these spores. A tiny bit of black "cord" projecting from the base of the young stipe tells the story. It might be interesting to students to follow this up with a few experiments.

The subject of edible mushrooms has become very popular of late and many inquiries have been received regarding reliable literature. It can now be stated that there is in press and very soon to appear a large colored chart and a descriptive handbook containing the principle edible and poisonous species of fungi found in America. It is hoped that much safe and useful information will be disseminated by means of this long desired publication.

A NEW SPECIES OF COLUS FROM PENNSYLVANIA

Colus Schellenbergiae Sumstine, sp. nov.

Volva dark-brown, smooth, globose, 2–3 cm. in diameter, breaking at maturity into several irregular segments; receptaculum stipitate, the stipitate portion cylindric, hollow, reticulate-pitted, white below, orange-colored above, slightly enlarged upward, dividing into three arms; arms arched outward, united at the apex, transversely wrinkled, cylindric or sometimes compressed so as to appear triquetrous, orange-colored, attenuate upward, 3–6 cm. long; gleba dark-green, borne on the inner side of the arms, foetid; spores hyaline, ellipsoid-ovoid, 4.5–5.5 μ × 2–2.5.

Growing in the yard of Mrs. F. F. Schellenberg, Pittsburgh, Pa., July, 1915. Type specimens have been deposited in the Carnegie Museum, Pittsburgh, Pa., and in the New York Botanical Garden. Plants developed from eggs removed from the ground had very long arms, but the stipitate portion of the receptaculum was very short. The description of *Colus javanicus* Penzig agrees in a general way with my plants. The former are smaller. I do not have access to the original description, and Saccardo in the *Sylloge* does not give the color of *C. javanicus,* so I have not been able to compare the two species with respect to color.

DAVID R. SUMSTINE.

REVIEW OF KNIEP'S BEITRÄGE ZUR KENNTNIS DER HYMENOMYCETEN, III[1]

Kniep in his previous report[2] on the question of the origin of the binucleated cells in the Basidiomycetes mentioned the appearance of small bodies in the clamp connections which appeared to him to be disintegrating nuclei. In his present paper he makes these indefinite bodies the basis of a new theory in explanation of how the binucleated cells in the Basidiomycetes arise. In accordance with his new view, he accepts the fact that the binucleated cells arise before the anlage of the carpophore is formed. While his previous observations are correct, he now interprets them as abnormalities. The present article deals with a cytological study of *Corticium varians* sp. nov. and *Corticium serum* Pers. These species have a single nucleated spore and the nucleus divides after the spore germinates. A young mycelial cell has but a single nucleus but at the time a clamp connection is formed the nucleus divides. Kniep holds that the clamp is budded from the mycelial cell at some point between the two nuclei. So soon as the clamp is sufficiently large one of the nuclei moves into it while the other comes to lie near its base. Conjugate division of the nuclei now takes place. The daughter nuclei arrange themselves so that two non-sister nuclei move to the apical portion of the cell, one remains in the basal portion while the fourth is left in the clamp connection. Kniep finds that the cross wall of the mother cell does not appear until after the clamp has budded out and that it is formed directly below the origin of the clamp connection. Later a second wall appears at the base of the clamp separating it from the apical cell. The result of these processes is a binucleated apical cell, a uninucleated basal cell, and the clamp with a small nucleus. Fusion of the basal cell and the clamp connection now takes place and the nucleus of the clamp connection passes into the basal cell. Thus making the basal cell also binucleated. When a branch is formed, practically the same sequence of phenomena occurs. One nucleus remains in the mother cell, the other migrates to the new branch and a clamp connection is formed between them. In old mycelial cells fusion of the clamp connection and the basal cell takes place quite regularly. Kniep found this peculiar type of conjugate division also in *Panus stipticus, Clitocybe flaccida,* and *Polyporus destructor,* but unfortunately he gives no figures in spite of the fact that these forms have been studied by other cytologists who failed to find such divisions.

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[1] Kniep, Hans, Bot. Zeit. **7**: 369–398, *pl. 2, fig. 1–20.*

[2] Kniep, Hans, Beiträge zur Kenntnis der Hymenomyceten I, II. Bot. Zeit. **5**: 594–637, *pl. 2–4, f. 1.* 1913.

Kniep also takes up the question of the phylogenetic significance of the clamp connection. Kniep claims that the binucleated mycelial cells are the homologues of the ascogenous hyphae. He also contends that the penultimate cell of the ascogenous hyphae is the homologue of the apical mycelial cell, and the clamp connection is the homologue of the end cell in an ascogenous hypha. The question that naturally suggests itself is: Does the apical mycelial cell of the Basidiomycetes become the basidium as the penultimate cell becomes the ascus in the Ascomycetes? Kniep claims to have traced the hyphae in a number of forms and found that there is a clamp connection between every two adjacent binucleated cells and there is likewise a clamp connection at the base of each basidium. But in *Lactarius piperatus* Scop., *Tricho-*

loma imbricatum Quél., and *Amanitopsis vaginata* Roze, no such clamp connections appear. According to Harper (Bot. Gaz. 1902), there are no clamp connections between the basidia and the subhymenial cells in *Hypochnus subtilis* and *Coprinus ephemerus.* Buller (Researches on Fungi, 1909) figures no clamps at the bases of the basidia in a number of *Coprinus* species. My own studies on *Coprinus micaceus, C. ephemerus,* and *C. stercorarius* (unpublished) fail to show clamp connections on the basidia of these forms. In over twenty species of Boleti (Bull. Torr. Club, 1913) no clamp connections were observed on the basidia. Yates's figures of his histological studies of certain Boletaceae (Univ. Calif. Publ. 1916) also show no clamp connections.

Kniep fails to trace the hyphae in the trama and to tell definitely whether or not he found clamp connections in these hyphae. Kniep's theory of the clamp cell is not supported by sufficient evidence and it still remains to trace out the origin and the history of the binucleated hyphae through to the basidia. This undoubtedly will clear up many questions on the morphology of the higher Basidiomycetes. MICHAEL LEVINE.

A VERY DANGEROUS MUSHROOM

The poisonous mushroom described below was brought to me for critical examination on May 1, 1916, by Mrs. Rufus Hatch, of Pelham Manor, New York. It grew plentifully in her mushroom beds the past winter, almost to the exclusion of the common cultivated mushroom, and was eaten by Mrs. Hatch and four members of her household with nearly fatal results. A full description of the effects will be published; but it is considered important to send out a warning immediately that *poisonous mushrooms may apparently develop from commercial spawn and that growers must be careful to eat or sell from their mushroom beds only the common mushroom with white cap and pink gills, Agaricus campester.*

Panaeolus venenosus sp. nov.

Pileus thick, fleshy, hemispheric when very young, sometimes hatshaped, at length expanded, cespitose, 3–5 cm. broad; surface moist, slightly viscid when very young, hygrophanous, bay becoming fulvous or isabelline according to age and moisture conditions, glabrous, smooth on the umbo, rugose and folded on the broad rim when in the hat-like stage; margin entire to lobed, not projecting, smooth, entirely free from fibrils or remnants of a veil, incurved when young, marked with a water-soaked, dark-fulvous zone about 3 mm. broad; context white or slightly yellowish, very thick at the center and very thin toward the margin, the odor and taste resembling that of the common mushroom; lamellae squarely adnate, without sinus or decurrent tooth, plane, somewhat semicircular in shape, at least when young, inserted, fuliginous, gray or whitish on the edges, not distinctly marbled, purplish-fuliginous when viewed from below, of medium distance, about 8 mm. broad; spores ellipsoid or ovoid, somewhat pointed or narrowed at both ends, black, smooth, opaque, 11–13 $\times$ 7–8.5 μ; cystidia not found; stipe thick, fleshy, sometimes equal but often much enlarged upward, whitish or rosy-isabelline, not polished, longitudinally striate at the apex, whitish, pruinose above, whitish-tomentose below, conspicuously hollow, 6–10 cm. long, 5–10 mm. thick.

Type collected by Mrs. Rufus Hatch in her mushroom beds at Pelham Manor, New York, May 1, 1916 (herb. N. Y. Bot. Gard.).

At first sight, the specimens suggested the genus *Psilocybe*, since the gills were purplish-brown and the margin did not project beyond them; but the spore-print proved to be black and the spores typically those of the genus *Panaeolus*. The species is aberrant and might be placed in a different group or subgroup with species like *Panaeolus digressus* Peck and *Panaeolus acidus* Sumstine. Other species of *Panaeolus* have been considered somewhat poisonous, but apparently none have exhibited such poisonous properties as this.

W. A. MURRILL.